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Applicant(s): Michael M. Iwatake (et al.) Examiner: Anh D. Mai
Serial No.: 10/711,298 Group Art Unit: 2814
Filed: September 9, 2004 Attorney Docket No: FIS920040156
Title: VIA CONTACT STRUCTURE HAVING DUAL SILICIDE LAYERS

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This request is being filed with a Notice of Appeal.

Applicants respectfully request review of the final rejection in the above-identified application. No amendments are being filed with this request.

Reasons for this request begin on page 2 of this paper.

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Claim Rejections - 35 USC §112

In the Final Office Action, the Examiner rejected claims 4 and 5 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter. In particular, the Examiner alleges that the first metal is a silicide and the sidewall portion of the second metal is a metal and therefore they are not the same. The Examiner also alleges that because the first metal and the bottom portion of the second metal are silicide, they do not consist of essentially cobalt or titanium.

Applicants respectfully disagree with the Examiner's rejection.

Claims 4 and 5 depend indirectly from independent claim 1, which recites a first layer consisting essentially of "a silicide of a first metal" and a second layer including "a second metal" and "a silicide of said second metal". Claim 4 recites that the first metal (which forms in the silicide of the first layer) and the second metal (which forms a sidewall portion and the silicide of a bottom portion of the second layer) are the same. Claim 5 recites that the first metal consists essentially of cobalt, and the second metal consists essentially of titanium. It is clear that claims 4 and 5 are definite and distinctly claim the subject matter which Applicants regard as the invention.

Regarding the Examiner's rejections of claims 4 and 5, Applicants respectfully submit that the Examiner's allegation that "because first metal is the silicide while ... the second metal ... is a metal, not a silicide. Therefore, they are not the same" or "the first metal is a silicide (103), thus, not consists essentially cobalt ... the bottom portion (of the second metal) is a silicide ... thus not consists essentially of titanium" has no technical merit for the reasons below.

A metal is different from a silicide and is not a silicide. On the other hand, a silicide may be formed by metals and thus may comprise of metals. It is both technically and factually possible that a metal or a metal that forms a silicide may be the same or different from another metal or another metal that forms another silicide. For the same argument, a metal or a metal that forms a silicide may consist essentially of cobalt, titanium, or any other metals.

Claim Rejections - 35 USC §102

In the Office Action, the Examiner rejected claims 1-5 and 8 under 35 U.S.C. §102(b), as being anticipated by Chung et al. (US Patent No. 5,094,981).

Applicants respectfully disagree with the Examiner's rejection.

Independent claim 1 claims a via contact structure that comprises, inter alia, a dielectric region "having an outer surface and an opening extending from said outer surface through said first layer to said top surface of said substrate", and a second layer "lining said opening and contacting said top surface in said opening". Applicants respectfully submit that prior art reference Chung et al. does not teach, suggest, or even imply the above distinctive elements of claim 1.

In the Office Action, the Examiner alleges that prior art reference Chung et al. describes a via contact structure having a first layer (42c) and a dielectric region (32) that has an outer surface and an opening extending from the outer surface of the electric region (32) (FIG. 2d of Chung et al. as suggested by the Examiner). However, the Examiner failed to show that the opening of the dielectric region (dielectric region 32 according to the Examiner) extending from said outer surface through said first layer (layer 42c according to the Examiner) to said top surface of said substrate (substrate 10 according to the Examiner), as specifically required by independent claim 1.

In the Office Action, the Examiner alleges that the expression of "an opening extending from said outer surface through said first layer to said top surface of said substrate" is a product by process limitation and therefore is given no patentable weight.

Applicants respectfully disagree with the Examiner's contention.

Applicants respectfully submit that the Examiner's allegation (that the above quoted expression is a product by process limitation) has no merit. The expression of "extending from said outer surface through said first layer to said top surface of said substrate" describes the structure of an opening, and is clearly a structural limitation of the claimed invention, not a description of process.

In the Office Action, the Examiner also alleges that prior art reference Chung et al. describes a second layer lining the opening and contacting the top surface in the

opening. Applicants respectfully submit that the Examiner's allegation is false and with no merit. Because the opening of dielectric region (32), as alleged by the Examiner, does not even extend through layer (42c) to the top surface of substrate (10), as is clearly shown in FIG. 2d, it is physically and logically impossible for liner (34) to be in contact with top surface of substrate (10) in the opening of dielectric region (32).

In view of the above remarks, Applicants respectfully submit that claim 1 of present invention is not anticipated under 35 U.S.C. §102(b) by prior art reference of record, in particular by Chung et al., and is patentable.

Claims 2-5 and 8 depend directly or indirectly from claim 1, and thus include all the distinct elements of claim 1 in addition to other distinctive features and elements. Therefore, claims 2-5 and 8 are patentable at least for the reasons as described above with regard to claim 1.

Claim Rejections - 35 USC §103

In the Office Action, the Examiner rejected claims 6, 7, 9 and 10 under 35 U.S.C. §103(a), as being unpatentable over Chung et al. in view of Ohsaki.

Applicants respectfully disagree with the Examiner's rejection.

Claims 6, 7, 9 and 10 depend directly or indirectly from independent claim 1, and so are patentable at least for the reasons as described above with regard to claim 1.

Respectfully submitted,



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Dated: July 7, 2006

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		FIS920040156	
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on <u>July 7, 2006</u>		10/711,298	September 9, 2004
Signature <u>Amy Barger</u>		First Named Inventor	
Typed or printed name <u>Amy Barger</u>		Michael M. Iwatake	
		Art Unit	Examiner
		2814	Anh D. Mai
Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.			
This request is being filed with a notice of appeal.			
The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.			
I am the			
<input type="checkbox"/> applicant/inventor.		Signature	
<input type="checkbox"/> assignee of record of the entire interest. See 37 CFR 3.71. Statement under 37 CFR 3.73(b) is enclosed. (Form PTO/SB/96)		Yuanmin Cai	
<input checked="" type="checkbox"/> attorney or agent of record. Registration number <u>56,513</u>		Typed or printed name	
		845-894-8469	
		Telephone number	
<input type="checkbox"/> attorney or agent acting under 37 CFR 1.34. Registration number if acting under 37 CFR 1.34 _____		July 7, 2006	
		Date	
NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.			
<input type="checkbox"/> *Total of _____ forms are submitted.			

This collection of information is required by 35 U.S.C. 132. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11, 1.14 and 41.6. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop AF, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

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